

CLAIMS:

1. A pressure-sensitive adhesive sheet comprising a composite film comprised by a composition containing a urethane polymer and a vinyl polymer as effective components, a first film comprising a material different from that of the composite film, and a pressure-sensitive adhesive layer, wherein the pressure-sensitive adhesive sheet has a modulus of 9 N/mm² or more and 250 N/mm² or less when an oblong piece of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.
2. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the pressure-sensitive adhesive sheet has a modulus of 15 N/mm² or more and 250 N/mm² or less when an oblong piece of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.
3. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the vinyl polymer is an acrylic polymer.
4. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the composite film comprises a film obtained by reacting a polyol and a polyisocyanate in a radical polymerizable monomer to form a urethane polymer, coating a mixture of the urethane polymer and the radical polymerizable monomer on the first layer and irradiating a radiation onto the coating to cure it.
5. The pressure-sensitive adhesive sheet as claimed in claim 4, wherein the radical polymerizable monomer is an acrylic monomer.

6. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the composite film has a storage modulus at 25°C of less than 2.0×10^8 Pa and a storage modulus at 100°C of 3.0×10^5 Pa or more.
- 5 7. The pressure-sensitive adhesive sheet as claimed in claim 6, wherein the first film has a storage modulus at 25°C of 2.0×10^8 Pa or more.
8. The pressure-sensitive adhesive sheet as claimed in claim 7, wherein the first film has a thickness (t1) of 10 μm or more and 200 μm or less and the composite film has a thickness (t2) of 10 μm or more and 300 μm or less, and wherein a ratio of the thicknesses (t1/t2) is $t1/t2 = 0.1$ to 10.
- 10 9. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein pressure-sensitive adhesive sheet comprises the first film on one side of the composite film and a second film on the other side of the composite film.
- 15 10. The pressure-sensitive adhesive sheet as claimed in claim 1, wherein the first film has a thickness (t1) of 10 μm or more and 200 μm or less and the composite film has a thickness (t2) of 10 μm or more and 300 μm or less, and wherein a ratio of the thicknesses (t1/t2) is $t1/t2 = 0.1$ to 10.
- 20 11. A multi-player sheet for use for a pressure-sensitive adhesive sheet, comprising a composite film comprised by a composition containing a urethane polymer and a vinyl polymer as effective components, and a first film comprising a material different from that of the composite film, wherein the pressure-sensitive adhesive sheet has a modulus of 9 N/mm² or more and 250 N/mm² or less when an oblong piece of the
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pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.

12. The multi-layer sheet as claimed in claim 11, wherein the multi-layer sheet comprises the first film on one side of the composite film and a second film on the other side of the composite film.

13. A method of producing a pressure-sensitive adhesive sheet, comprising coating a mixture containing a urethane polymer and a radiation polymerizable monomer on a first film, irradiating a radiation onto the coating to cure it to form a composite film, and forming a pressure-sensitive adhesive layer on the composite film.

14. The method of producing a pressure-sensitive adhesive sheet as claimed in claim 13, wherein the mixture is produced by reacting a polyol and a polyisocyanate in the radical polymerizable monomer to form a urethane polymer.

15. A method of producing a multi-layer sheet, comprising coating a mixture of a urethane polymer and a radical polymerizable monomer on a first film and irradiating a radiation onto the coating to cure it to form a composite film.

16. The method of producing a multi-layer sheet as claimed in claim 15, wherein after the mixture is coated on the first film, a second film is overlaid thereon and the radiation is irradiated above the second film to cure the coating to form a composite film, thereby forming a multi-layer sheet having the first film, the composite film and the second film.

17. The method of producing a multi-layer sheet as claimed in claim 15, wherein the mixture is produced by reacting a polyol

and a polyisocyanate in the radical polymerizable monomer to form a urethane polymer.

18. The method of producing a multi-layer sheet as claimed in claim 15, wherein the method comprises reacting a polyol and
5 a polyisocyanate in the radical polymerizable monomer to form a urethane polymer, coating a mixture containing the urethane polymer and the radical polymerizable monomer on a base material, irradiating a radiation onto the coating to cure it to form on one side of the first layer a composite film having a storage
10 modulus at 25°C of less than 2.0×10^8 Pa and a storage modulus at 100°C of 3.0×10^5 Pa or more.

19. A method of processing a product, comprising applying a pressure-sensitive adhesive sheet to a product to be precision processed and conducting precision processing of the product
15 in a held and/or protected state, wherein the pressure-sensitive adhesive sheet comprising a composite film comprised by a composition containing a urethane polymer and a vinyl polymer as effective components, and a first film comprising a material different from that of the composite film,
20 the pressure-sensitive adhesive sheet having a modulus of 9 N/mm² or more and 250 N/mm² or less when an oblong piece of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm.